

Water Quality Report

CITY OF AMESBURY, MA

DPW-WATER DEPARTMENT

PWSID# 3007000



Amesbury's public water system operates under strict state and federal regulations. To help meet the stringent standards, quality control and quality assurance procedures are employed at every level of water system operations. A multi-barrier approach to drinking water protection is in place to eliminate contamination from the supply water all the way to the tap. The management and employee teams charged with the responsibility for providing safe drinking water to you are skilled and well-trained. With this combination of measures, we are able to provide a safe and reliable product that is essential to this community.

Each year at this time our customers are mailed a Consumer Confidence Report (CCR) summarizing information about your drinking water, which includes information on source water, the treatment plant process, distribution system, drinking water contaminants, and our compliance with drinking water regulations. These components all play a critical role in protecting public health.

Kenneth Gray
Mayor

Robert L. Desmarais, P.E.
DPW Director

For more information about the treatment process, or to schedule a tour of the facility, contact Tom Rogers at 978-388-0853.

Visit our website at:

www.amesburyma.gov

This is the Twentieth annual CCR that is part of the regulatory process of informing you, and it discusses the results of water quality testing during 2017. It reflects the water department's ability to achieve and maintain compliance with the federal Safe Drinking Water Act. It describes how we operate and manage our water resources to meet your needs.

Our goal is to provide in the best interests of the public's health and welfare. If you have any questions or comments about this report, please feel free to contact me at 978-388-0853 or email masonj@amesburyma.gov.

Sincerely,

Jeff Mason
Water System Manager

Facts:

Total Finished Water Pumped to city (2017) = 464,989,131 gallons

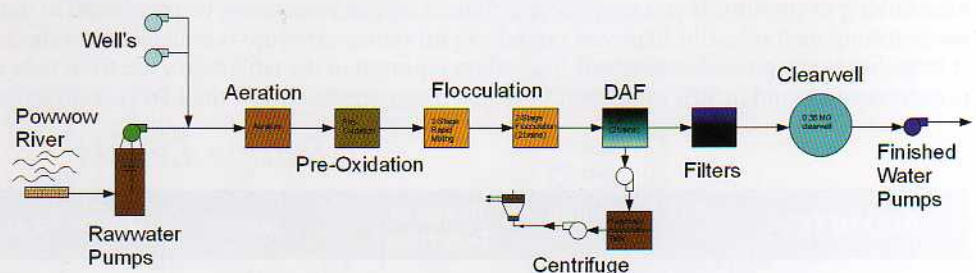
Average gallons per person per day in Amesbury (2017) = 48 gallons

Leaky faucet at 1 drip per second = 3000 gal per year (EPA data)

Amesbury Water rate (as of Jan 2016) = \$8.75 per 100 cubic feet (748 gal) = 1.2 cents per gallon

Where Your Drinking Water Comes From

Amesbury receives its drinking water from the Powow River which is supplemented by Tuxbury Pond, Lake Attitash and Meadowbrook. Two groundwater wells are also available for use during peak season. Each day millions of gallons of Powow River water is drawn directly into the water treatment plant for purification. The treatment process utilizes a series of physical and chemical steps designed to produce a safe and consistent quality product. The current treatment process is illustrated in the schematic below.



This consumer confidence report is the 20th publication to be issued under the Environmental Protection Agency (EPA) regulations requiring annual notification to all consumers about local drinking water sources and water quality information. It is being delivered to all consumers, the Amesbury Board of Health, the Massachusetts Department of Public Health (DPH), and the Massachusetts Department of Environmental Protection (DEP). Additional copies are available at the library, town hall, and water treatment plant. It summarizes Amesbury's drinking water sources, treatment facility, monitoring information, water quality parameters, and health-related water issues.

How to Read the Following Tables

The following tables present the results of most recent water quality testing during the 2017 calendar year, unless otherwise noted. All of the regulated drinking water contaminants that were detected in the water are listed in the tables that follow. The presence of contaminants in the water does not indicate that the water poses a health risk. Any potential health risk associated with a contaminant is clearly explained. All testing was done in accordance with EPA and MA DEP drinking water regulations. The following definitions have been provided to help you better understand Amesbury's water quality information.

Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.



Meter reading crew

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants (ex. chlorine, chloramines, chlorine dioxide).

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Treatment Technique (TT): A required process intended to reduce the level of contaminant in drinking water.

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers a treatment or other requirements that a water system must follow.

Parts Per Million (ppm), Parts Per Billion (ppb): These units are used to describe the levels of detected contaminants. One ppm is comparable to 1 cent in \$10,000 dollars; one ppb is comparable to 1 cent in \$10,000,000 dollars.

EPA = U.S. Environmental Protection Agency

DEP = Massachusetts Department of Environmental Protection (MA DEP)

CDC = U.S. Center for Disease Control and Prevention

TON (Threshold Odor Number): A measure of odor in water.

SMCL (Secondary Maximum Contaminant Level): SMCLs are established to regulate the aesthetics of drinking water like taste and odor.

Office of Research and Standards Guideline (ORSG): This is the concentration of a chemical in drinking water at or below which adverse health effects are unlikely to occur after chronic (lifetime) exposure, with a margin of safety. If exceeded, it serves as an indicator of the potential need for further action.

Test Results

Thousands of water samples were analyzed for the presence of biological, inorganic, and organic contaminants throughout the year. The following tables show only those contaminants that were detected in Amesbury's water at some level. Although all of the results listed here are under the Maximum Contaminant Levels (MCL), we feel it is important that you know exactly what was detected in the drinking water and how much of the substance was present. Massachusetts Department of Environmental Protection (DEP) allows us to monitor for certain substances less than once per year because the concentration of these substances do not change frequently. In these cases, the most recent test results are included along with the year in which the sample was collected. All units of measure for test results are reported in parts per million (ppm) unless noted otherwise.

Information About Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Amesbury Water Department is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at <http://www.epa.gov/safewater/lead>. The values reported in the table below are from tests conducted in 2017. Results represent the highest concentration found in 90% of the homes sampled and are well below the EPA's action levels requiring additional corrective measure.

Range Levels

PARAMETER	90th Percentile Value	Range of Detection	MCL	MCLG	# of Sites Above AL	SOURCE OF CONTAMINANT
Lead (ppb) 2017	ND	ND - 7.0	15 (action level)	Zero	Zero	Corrosion of household plumbing
Copper (ppm) 2017	0.25	0.04 - 0.31	1.3 (action level)	1.3	Zero	Corrosion of household plumbing

	HIGHEST RESULT	AVERAGE DETECTED	VIOLATION (Y/N)	POSSIBLE SOURCE OF CONTAMINATION
Turbidity (NTU)	0.60	0.04 - 0.60	N	Soil runoff
Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality.				

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Monitoring Requirements Not Met for Chlorite

Our water system violated several drinking water standards during July 2015 to July 2016. Even though these were not emergencies, as our customers, you have a right to know what happened and what we did to correct these situations.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During July 2015 to July 2016 we did not monitor for chlorite in the distribution system and therefore cannot be sure of the quality of our drinking water during that time.

What should I do? There is nothing you need to do at this time.

CONTAMINANT	REQUIRED SAMPLING FREQUENCY	NUMBER OF SAMPLES TAKEN	WHEN ALL SAMPLES SHOULD HAVE BEEN TAKEN	WHEN SAMPLES WERE OR WILL BE TAKEN
Chlorite ¹	3 distribution samples per month	0	Monthly, from July 2015 to July 2016	August 2016, and each month since then

The table above lists the contaminant(s) we did not properly test for during 2015 to 2016, how often we are supposed to sample for this contaminant and how many samples we are supposed to take, how many samples we took, when samples should have been taken, and the date on which follow-up samples were (or will be) taken.

What happened? What is being done? During the startup of the Chlorine Dioxide system at the Amesbury Water Treatment Facility in July of 2015; chlorite was not monitored at the required 3 distribution sample sites each month. During this time period the water leaving the treatment facility was tested daily as called for in the Regulations and all results were well below the Maximum Contaminant Level (MCL) of 0.8 ppm. Since August of 2016 all of the required distribution testing has been completed and results of those samples were all below the MCL.

For more information, please contact Tom Rogers (978) 388-0853, tom@amesburyma.gov or Amesbury Water Dept., 39 South Hunt Rd., Amesbury, MA, 01913.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

¹Chlorite: a disinfection by-product of chlorine dioxide.

Inorganic Contaminants							
REGULATED CONTAMINANT	DATE(S) COLLECTED	HIGHEST RESULT OR HIGHEST RUNNING AVERAGE DETECTED	RANGE DETECTED	MCL OR MRDL	MCLG OR MRDLG	VIOLATION (Y/N)	POSSIBLE SOURCE(S) OF CONTAMINATION
Barium (ppm)	1/6/17	0.01	0.01	2	2	N	Discharge of drilling wastes, discharge from metal refineries; erosion of natural deposits
Perchlorate (ppb)	8/22/17	0.098	0.098	2	N/A	N	Rocket propellants, fireworks, munitions, flares, blasting agents

Disinfectants and Disinfection By-Products							
Total Trihalomethanes (TTHMs) (ppb)	Quarterly	67.5	17.0 – 67.5	80	----	N	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	Quarterly	53.0	18.0 – 53.0	60	----	N	Byproduct of drinking water disinfection
Chlorine (ppm) [free]	Daily	1.25	0.78 – 1.25	4	4	N	Water additive used to control microbes
Chlorite (ppm)	Monthly	0.11	ND – 0.11	1	0.8	N	Byproduct of drinking water Chlorination
Chlorine dioxide (ppb)	Daily	620	ND – 620	800	800	N	Water additive used to control microbes

Unregulated Inorganic Contaminants							POSSIBLE SOURCE
UNREGULATED AND SECONDARY CONTAMINANTS	DATE(S) COLLECTED	RESULT OR RANGE DETECTED	AVERAGE DETECTED	SMCL	ORSG		
Sodium (ppm)	1/6/17	33.0	33.0	----	20		Natural sources; runoff from use as salt on roadways; by-products of treatment process
Sulfate (ppm)	8/22/17	47.0	47.0	250	----		Natural sources

Other Organic Contaminants – When detected at treatment plant as VOC residuals, not TTHM compliance							
Bromodichloromethane (ppb)	1/6/17	2.1	2.1	----	----		Byproduct of drinking water chlorination
Chloroform (ppb)	1/6/17	5.9	5.9	----	----		Byproduct of drinking water chlorination

Secondary Contaminants							
Manganese* (ppb)	Monthly	0.01 – 0.13	0.045	50	Health Advisory of 300 ppb		Erosion of natural deposits
Chloride (ppm)	8/22/17	52	52	250	----		Runoff from road de-icing, use of inorganic fertilizers, landfill leachates, septic tank effluents, animal feeds, industrial effluents, irrigation draining, and seawater intrusion in coastal areas
Copper (ppm)	8/22/17	0.01	0.01	1	----		Naturally occurring organic material
Odor (T.O.N.)	8/22/17	1.9	1.9	3 TON	----		Erosion of natural deposits; Leaching from wood Preservatives
PH	Daily	6.9 – 8.9	7.4	6.5 – 8.5	----		-----
Total Dissolved Solids (TDS) (ppm)	8/22/17	270	270	500	----		Erosion of natural deposits

*US EPA has established a lifetime health advisory (HA) value of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one-day and 10-day HA of 1000 ppb for acute exposure.

Microbiological Contaminants						POSSIBLE SOURCE(S) OF CONTAMINATION
UNREGULATED AND SECONDARY CONTAMINANTS	DATE(S) COLLECTED	HIGHEST RESULT	SAMPLE SOURCE	VIOLATION (Y/N)		
Giardia lamblia (cyst / liter)	12/12/17	0.18	Raw Water	N		Discharged especially where water is contaminated with sewage or animal wastes
Cryptosporidium (cyst / liter)	12/12/17	0.09	Raw Water	N		Discharged especially where water is contaminated with sewage or animal wastes

Some people who drink water containing Giardia lamblia or Cryptosporidium could experience severe gastrointestinal effects.

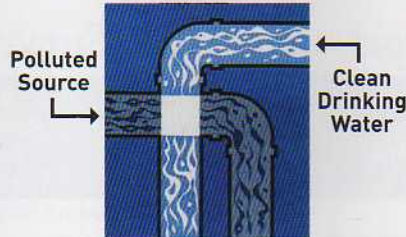
More Giardia information: <https://www.cdc.gov/parasites/giardia/general-info.html>

More Cryptosporidium information: <https://www.cdc.gov/parasites/crypto/general-info.html>

Giardiasis is a diarrheal disease caused by the microscopic parasite Giardia. A parasite is an organism that feeds off of another to survive. Once a person or animal (for example, cats, dogs, cattle, deer, and beavers) has been infected with Giardia, the parasite lives in the intestines and is passed in feces (poop). Once outside the body, Giardia can sometimes survive for weeks or months. Giardia can be found within every region of the U.S. and around the world.

AMESBURY WATER DEPARTMENT CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION

The Amesbury Water Department (AWD) makes every effort to ensure that the water delivered to your home and business is clean, safe and free of contamination. Our staff works very hard to protect the quality of water from the time it is extracted from the surface water source at the Powwow River, or our back up wells, throughout the entire treatment process and distribution to your home. But what happens when the water reaches your home or business? Is there still a need to protect the water quality from contamination caused by a cross-connection? If so, how?



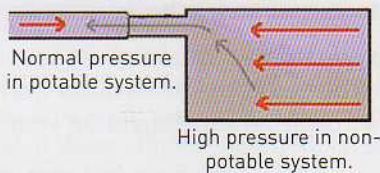
What is a cross-connection?

A cross-connection occurs whenever the drinking water supply is or could be in contact with potential sources of pollution or contamination. Cross-connections exist in piping arrangements or equipment that allow drinking water to come in contact with non-potable liquids, solids or gases (hazardous to humans) in the event of a backflow.

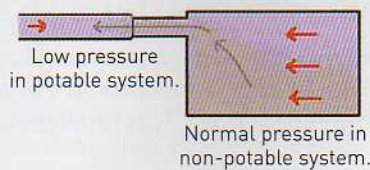
What is a backflow?

Backflow is the undesired reversed flow of water in the drinking water distribution lines. This backward flow of water can occur when the pressure created by a piece of equipment or system connected to a potable water installation (home or business) is higher than the water pressure inside the water distribution line servicing that system (backpressure). Also, when the pressure in the distribution line drops due to routine occurrences such as water main breaks or heavy water demand, such as a fire, causes the water to flow backward inside the water distribution system (backsiphonage). Backflow is a problem that many water consumers are unaware of, a problem that each and every water customer has a responsibility to help prevent.

Back Pressure:




Back Siphonage:



What can I do to help prevent a cross-connection?

Without the proper protection something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you as a drinking water user can take to prevent such hazards, they are:

- NEVER submerge a hose in soapy water buckets, pet watering containers, pool, tubs, sinks, drains or chemicals.
- NEVER attached a hose to a garden sprayer without the proper backflow preventer.
- Buy and install a hose bibb vacuum breaker in any threaded water fixture. The installation can be as easy as attaching a garden hose to a spigot. This inexpensive device is available at most hardware stores and home-improvement centers.
- Identify and be aware of potential cross-connections to your water line.
- Buy appliances and equipment with a built-in backflow preventer when available.
- Buy and install backflow prevention devices or assemblies for all high and moderate hazard connections such as pools and hot tubs/spas. These devices require installation by a Massachusetts licensed plumber.



If you are the owner or manager of a property that is being used as a commercial, industrial or institutional facility you must have your property's plumbing system surveyed for cross-connections by the Amesbury Water Department. If your property has NOT been surveyed for cross-connections contact Amesbury's CCCP Coordinator, Jim Higgins at 978-388-0853 to schedule a cross-connection survey.

Requirements

The Massachusetts Drinking Water Regulations, 310 CMR 22.00, requires all public water systems to have an approved and fully implemented Cross-connection Control Program (CCCP). The Amesbury Water Department is working diligently to protect the health of its drinking water customers from the hazards caused by unprotected cross-connections through the implementation of its cross-connection survey program, elimination or proper protection of all identified cross-connections, the registration of all cross-connections protected by reduced pressure backflow preventers (RPBPs) or a double check valve assembly (DCVA), and the implementation of a testing program for all RPBPs and DCVAs.

The following chart shows how the AWD's CCCP is being implemented:

Cross-connection Surveys Information

Type of Facilities	Total # Facilities Served	# Facilities Surveyed for Cross-connection	# Facilities Remaining to be Surveyed for Cross-connection	# Facilities Surveyed for the First Time in [2017]	# Facilities Re-surveyed in [2017]
Commercial	246	245	1	0	1
Industrial	24	23	1	0	1
Institutional	10	10	0	0	0
Municipal	13	13	0	0	0

Backflow Prevention Devices and Assemblies Testing Information

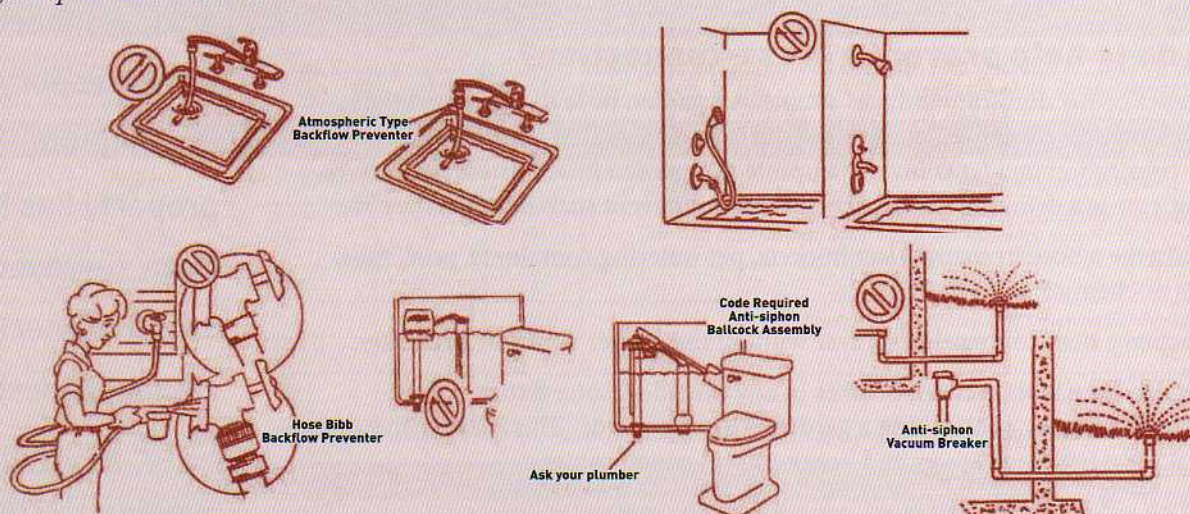
Type of Backflow Preventer	# Devices or Assemblies	Test Frequency	Total # of Routine Test	# Test Failures	# Re-test
Reduced Pressure Backflow Preventer (RPBP)	124	Semi-Annual	248	0	0
Double Check Valve Assembly Backflow Preventer (DCVA)	82	Annual	82	0	0
Pressure Vacuum Breaker (PVB) & Anti-siphon Vacuum Breaker (AVB)	1	Annual	1	0	0

*Required frequency **Recommended

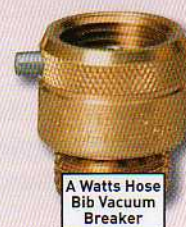
If you have any questions, please contact your CCCP coordinator Jim Higgins at 978-388-0853.

Some Examples Where Cross-connections Occur

The pollution can come from your own home. For instance, you're going to spray fertilizer on your lawn. You hook up your hose to the sprayer that contains the fertilizer. If the water pressure drops at the same time you turn on the hose, the fertilizer may be sucked back into the drinking water pipes through the hose. This problem can be prevented by using an attachment on your hose called a *backflow-prevention device*.



The Amesbury Water Department recommends the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. You can purchase this at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in Amesbury! For additional information on cross connections and on the status of your water systems cross connection program, please contact Jim Higgins, Cross Connection Control Program coordinator at 978-388-0853.





City of Amesbury
Water Department
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Amesbury, MA 01913

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What the EPA Says About Drinking Water

Contaminants and Health Risks

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Other Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons—such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants—can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC (Center for Disease Control) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline.

Contaminants

The sources of drinking water (both tap and bottled) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animal or human activity. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be either naturally occurring or the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, Mass DEP and US EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Source Water Assessment and Availability

DEP assessed Amesbury's public water supply in a source water assessment and protection (SWAP) report. Based on the presence of at least one high threat land use within the protection areas, the water supply was assigned a high susceptibility ranking. The high threat activities listed by DEP are those that typically use, produce, or store contaminants of concern, which if managed improperly, are potential sources of contamination. It is important to understand that a release may never occur from a potential source, and the actual risk may be lower than the relative threat ranking assigned to it. The report notes several key issues to address, and Amesbury was commended for taking an active role in source water protection measures.



1 Million Gallon Storage Tank

The complete SWAP report is available online at www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3007000.pdf